

Introducing the  
**QUANTUM**<sup>®</sup>  
energy system

**Dimplex**<sup>®</sup>

CI/SFB (56)



The electric heating and hot water system  
that adapts to its environment



## The latest innovation from a world leader in energy efficient heating solutions

For over 60 years, Dimplex has built its portfolio to the point where it is now the brand leader in electric space and water heating, offering a selection of over 700 products within the electric space heating sector alone – the widest in the world. Its growth can be attributed to providing affordable heating solutions that are efficient, reliable and durable, as well as attractively designed.

- Tried and trusted by installers, specifiers and end users alike
- The world's largest electric heating appliance manufacturer
- Backed by an award winning customer services team
- Member of ECA, EDA and BEAMA
- Free heating design service
- Over 45 million heaters sold via the trade in the UK alone
- Part of the multinational Glen Dimplex Group

With a proud reputation for continued investment in quality and innovation, Dimplex is delighted to introduce its latest innovation – **QUANTUM**.

Designed and developed by our own in-house team of experts and manufactured in our own factory in Northern Ireland, Quantum is up to **25% cheaper** to run and uses **20% less energy** than comparable static storage heaters.

**QUANTUM** – adapting to change



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# The future is electric

## The future is Quantum®

**The UK heating market is changing – fast. Rising CO<sub>2</sub> emissions, new legislation and spiralling fuel costs mean finding a more energy-efficient way to heat our homes is now a priority.**

Electricity is moving to a low-carbon source of generation. As it does so, it will become a universal and versatile source of energy.

*“Technologies that use electricity to generate heat are well placed to become major low-carbon heating technologies in the coming decades.”*

DECC  
Future of Heating, March 2011

Dimplex, the world's largest manufacturer of electric heating products, is shaping the future of electric heating. They have developed a revolutionary system that combines state-of-the-art electric heating with an economical demand response management tool.

The culmination of three years' research and development, the Dimplex Quantum Heating System provides the world's most advanced electric space and water heating management system. The result: optimal efficiency, comfort and control.

Why so advanced? Quantum is designed to use low-cost, low-carbon energy from nationally generated renewable sources, such as hydro-electric, solar photovoltaics and wind turbines. It has the ability to store this energy during periods of low demand, turning it into cheap, efficient heat only when it's needed.







The future is electric. The future is Quantum.

# Quantum®

## A unique concept in electric heating

**The Quantum Heating System gives homeowners a low-cost, low-carbon, electric heating system.**

The system offers unrivalled running costs, and will use decreasing amounts of carbon over its lifetime.

### The Quantum Room Heater

- Uses off-peak tariffs for low running costs – on a room-by-room basis it is expected that 90% of the heating requirement will be met by off-peak energy
- Automatically adjusts to the user's needs through its dynamic storage capacity
- Precisely matches the user's chosen heating profile
- Easy-to-use, electronic user interface with LCD display complete with:
  - room temperature setting
  - seven-day programmer
  - installer settings

The Quantum heater uses off-peak tariffs for lower running costs, providing up to 20% annual energy saving and up to 25% annual running cost saving, compared to a system using manually controlled static storage heaters.

- Designed to operate on any off-peak tariff
- Fan-assisted output for extremely rapid heat-up time
- Soft-start, ultra quiet fan for minimum intrusion
- Boost element ensures heat is always available even with unexpected demand
- Attractive, state-of-the-art design
- Compact design (no deeper than a double wet radiator) with flexible mounting options and adjustable feet positions
- Covers previous 'fixing marks' of most comparably sized traditional storage heaters
- Optional communications link for demand side management to help stabilise the electricity supply network\*

### The Quantum Cylinder\*

Class-leading and intuitive, smart energy storage water vessel.

- Provides mains pressure hot water for fast-filling baths and powerful showers
- Manufactured from stainless steel with a 25-year warranty
- Choice of five sizes, ranging from 125 to 300 litres – both vented and unvented
- Advanced controls with feedback on hot water availability – so no surprise cold showers!
- Hard-wearing, black insulation outer shell made from recycled materials
- Delivers a long-life, low-maintenance, economical hot water supply
- Two-way communications potential, allowing demand side management

The class-leading and intuitive Quantum Cylinder is a long-life, low-maintenance, economical hot water supply system.



*Quantum has running cost savings of up to 25% compared to a manually controlled static storage heater*



### The Quantum Hub\*

Think of the Quantum Hub as an optional system manager.

- Facilitates the two-way communication between the Quantum appliances and the energy supply company
- Completely automated and pre-set – no need for user input
- Uses future-proofed technology, ensuring it can support upcoming changes in energy supply
- Compact (A5) size and may be mounted discretely anywhere within the property
- Enables the Quantum heating and hot water units to be connected to one permanently live electrical circuit – and still benefit from off-peak rate costs
- Requires a transceiver to be fitted to each Quantum appliance



The Quantum Hub is effectively a 'system manager', facilitating the two-way communication between the Quantum appliances and the energy supply utility.

\*Available Autumn 2013



# Technologically advanced

## Low running costs

**Great advances in insulation technology and controllability ensure the Quantum heater is up to 25% cheaper to run and uses up to 20% less energy than other comparable electric heaters.**

The Quantum heater uses insulation material which comes close to the lowest theoretically possible thermal conductivity – an insulation with a thermal conductivity even lower than that of still air.

Better still, Quantum uses off-peak tariffs whenever possible to minimise costs, so users can enjoy all the benefits of electric heating, with running costs unattainable by other direct acting electric systems. And to top it all, the Quantum heater is easy to install and virtually maintenance free.

### The Quantum Room Heater will:

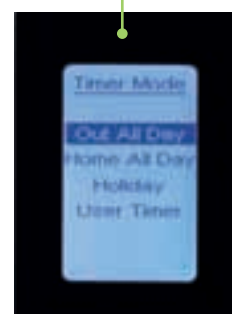
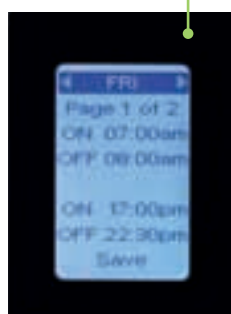
- Intelligently monitor weather and usage patterns, learning from and adapting to them, delivering heat accordingly
- Work seamlessly with the grid, using off-peak tariffs whenever possible to minimise user costs and maximise efficiency
- Closely follow target room temperature, intuitively adjusting settings using a thermostat that is accurate to within a fraction of a degree (C)
- Respond quickly to changing climate and room temperature conditions, and alter configurations automatically

All of this adds up to highly controllable heating, with exceptionally low running costs.

The Quantum heater uses an insulation with a thermal conductivity even lower than that of still air.



7 day programmer with 3 pre-set (adjustable) timer profiles, display adjustment. Holiday mode giving frost protection, landlord setting, child lock setting and many more features.





# High controllability

## Incredibly simple



Target temperature display is colour coded to assist visually impaired.

Rotary knob adjusts target temperature and enables menu scrolling and selection.

The heater intuitively and precisely responds to user lifestyle and climate conditions, delivering just the right amount of heat. Of course, if an individual wants to adjust heat levels manually, he or she can – using the built-in, state-of-the-art controls.

### End users can:

- Manually adjust heat levels via the easy-to-use, built-in electronic interface with LCD display, advance/menu/back buttons and rotary 'click' selector
- Choose and adjust preset programmes, such as 'Home all day', then sit back and relax as the Quantum Heating System takes control

Quantum intuitively follows target room temperature, adjusting settings using a thermostat that is accurate to within a fraction of a °C.



Dimplex Quantum

# Quantum®

## Benefits for all

### **Harnessing low-carbon, low-cost electricity, the Quantum heater delivers the future of heating, today.**

Whether you're specifying, installing, living or working with Quantum, you'll quickly realise the benefits that this dynamic heating system has to offer.

#### **Specifier Benefits**

For private developers, social housing providers and private landlords.

- Attractive, state-of-the-art design – superior to other storage and wet systems
- Uses low-cost, low-carbon, future-proofed technology
- Easy to specify within SAP
- Available in a range of heater sizes, enabling greater flexibility in project specification
- Virtually maintenance free
- Compact with adjustable feet positions
- Covers previous 'fixing marks' of most comparably sized traditional storage heaters
- Easy to use controls to reduce user confusion

#### **End User Benefits**

- Attractive, state-of-the-art design – superior to other storage and wet systems
- Completely automatic once set up
- Economical to run, helping to alleviate the increasing problem of fuel poverty
- Offers improved comfort levels, heating only when required
- Accurate room temperature control with a thermostat accurate to +/- 0.3°C
- Responsive to changes in external temperature
- Uses a future-proofed, nationally-supplied fuel source
- Delivers high reliability and very low maintenance

#### **Installer Benefits**

- Simple to install – with separate instructions for both installer and user
- Includes an electronic controller pre-loaded with time/date and commissioning programme
- Reversible cable entry points and adjustable feet to ensure the chassis covers previous 'fixing marks' of most comparably sized storage heaters
- Easy to use controls to reduce user confusion



### **The Green Deal**

Quantum has been accepted as a Green Deal 'measure' by the department of Energy and Climate Change.

The Green Deal is an innovative government-backed financing mechanism that lets householders pay for energy-efficient improvements through savings on their energy bills.

As the 'golden rule' of the scheme is that the expected energy savings must be greater than the cost of the improvements, by installing Quantum householders should save energy and money – as well as helping the environment.

See the following for further information:  
[www.gov.uk/greendeal](http://www.gov.uk/greendeal)



Quantum uses up to  
20% less energy than  
comparable static  
storage heaters



### Energy Supplier Benefits

- Features multiple options for communication
- Facilitates the preservation of the off-peak tariff market
- Offers the potential for new tariff creation
- Provides a tool for economic Demand Response Management
- Delivers low-cost, low-carbon and flexible energy storage: utilities can decide how much energy to store and when to store it
- Improves use of national wind generation, helping to decarbonise the grid
- Allows for better balancing of supply and demand
- Increases system reliability and security
- Reduces the need for investment in networks
- Helps reduce the cost of standby generation



# Quantum® Heater

## Technical specifications

Model No.	Height	Depth	Width	Installed Weight
QM070	730mm	185mm	703mm	83kg
QM100	730mm	185mm	865mm	107kg
QM125	730mm	185mm	1069mm	135kg
QM150	730mm	185mm	1069mm	155kg

Model No.	Output Rating	Input Rating	Max. Storage Capacity	Boost Element Rating
QM070	700W	1560W	10.9kWh	630W
QM100	1000W	2200W	15.4kWh	880W
QM125	1250W	2760W	19.3kWh	1130W
QM150	1500W	3300W	23.1kWh	1300W

ENERGY CELL PACKS – Packaged separately, required in the following quantities:

Model No.	QM070	QM100	QM125	QM150
Energy Cell Packs Required	6	8	10	12

Controls	Electronic user interface with LCD display offering room temperature setting, seven day programmer, installer settings, three pre-set timer profiles, holiday setting and more.
Charge Controller	Fully automatic charge controller incorporates self learning algorithms to optimise daily energy storage, using multiple sensors to automatically adjust the charge taken based on recent energy use patterns and future programmed requirements.
Thermostat	Electronic – accurate to +/- 0.3°C.
Safety Devices	Electromechanical limit thermostat (self resetting). Electromechanical cut-out (manual reset). Electromechanical over temperature thermostat for fan. Electromechanical over temperature limit thermostat for fan.
Fan	Low rev/low noise heat circulation fan with variable speed and soft start.
Storage Core	High density bonded magnetite energy cells.
Thermal Insulation	Front, rear top and ends – microporous silica. Base – calcium silicate slab.
Colour/Finish	White.
Battery Backup	3.3V coin cell battery to backup real time clock. Battery life > 5 years.
Supply	230-240V / 50Hz. Off-peak + 24 hour supply required.
Approvals	BEAB / EN60335 / EMC / CE.
Warranty	2 years.



# Comparative test

## Quantum<sup>®</sup> vs static storage heater

### CLIMATE ROOM TEST CHAMBER

A climate room was built to accurately replicate a room from typical UK housing stock. It has two external walls and two internal walls, and the temperatures outside all walls, ceiling and floor are accurately controlled.

The U values of walls, windows and door are as follows:

Room dimensions 4m x 3m x 2.4m

U values:

Double layer solid brick outer walls 2.0

Insulated internal walls and ceiling 0.34

Insulated floor 0.25

UPVC double glazed window 3.3

UPVC double glazed door 3.0

Air change rate 1 A/C per hour

### THE TEST

A daily temperature profile was set up outside the two external walls to simulate an average heating day in a property based in Sheffield, England.

Minimum outside temperature +4°C

Maximum outside temperature +11°C

The heating periods were set at 07:00 to 09:00 and 16:00 to 23:00.

The target room thermal comfort temperature was 21°C.

The following heaters were tested under these conditions:

- 3.4kW (input) static storage heater with manual charge control – supplemented with a direct acting heater
- 2.8kW (input) Quantum heater (QM 125)

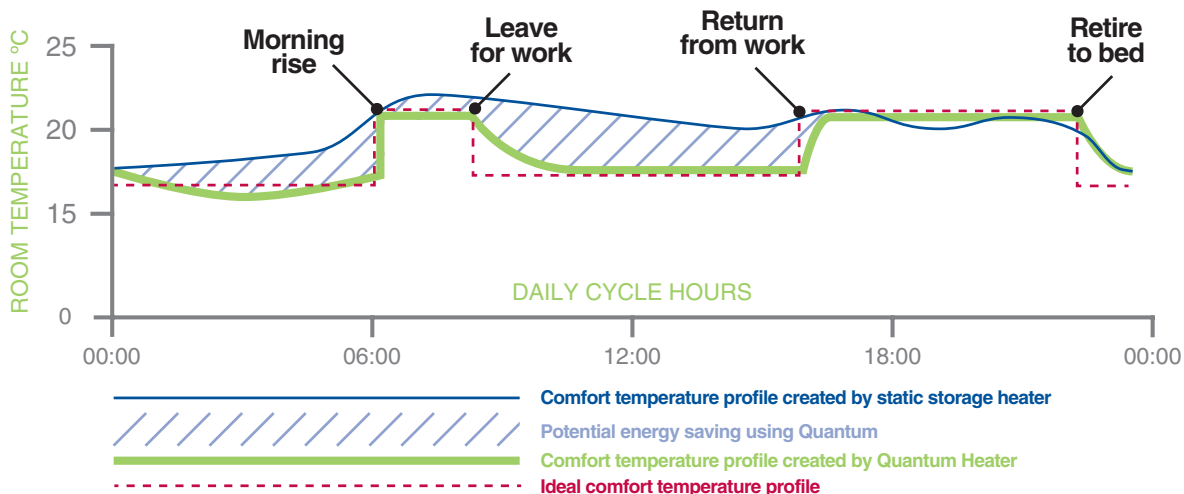
### RESULTS

#### Conventional Static 24kWh Storage Heater vs Quantum QM125

Average weekday profile

Quantum Energy Use = 10 kWh + 0.2kWh (fan) = 10.2kWh = 9 hours heating @ 21°C

Conventional Storage Energy Use = 12.2 kWh + 1.3kWh Direct Acting Supplementary Heating = 13.6kWh = 9 hours heating @ 21°C



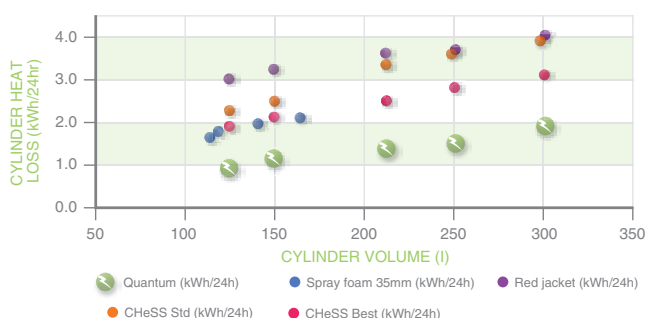
# Quantum® Cylinder

## Technical specifications

Cylinder Model	Volume	Height	Diameter	T&P Valve	Immersion 1	Immersion 2	Cylinder Model	Volume	Height	Diameter	T&P Valve	Immersion 1	Immersion 2
QWCd 125	125l	945mm	580mm	720mm	208mm	570mm	QWCd 250	250l	1765mm	580mm	1540mm	208mm	1265mm
QWCd 150	150l	1115mm	580mm	890mm	208mm	650mm	QWCd 300	300l	2065mm	580mm	1840mm	208mm	1495mm
QWCd 210	210l	1490mm	580mm	1265mm	208mm	820mm							

Type	<ul style="list-style-type: none"> <li>Vented and unvented systems</li> <li>Direct cylinders</li> </ul>
Colour / Finish	<ul style="list-style-type: none"> <li>Black</li> </ul>
Controls	<ul style="list-style-type: none"> <li>Highly intuitive ergonomically designed electronic control system</li> <li>Modern, easy-to-read display</li> <li>User adjustable cylinder water temperature to +/- 1°C</li> <li>“Boost” immersion heater for rapid response short-term use</li> <li>Hot water volume availability display</li> <li>User can set normal water temperature and boost water temperature</li> <li>Boost element automatically disengages upon reaching target temperature</li> </ul>
Technical features	<ul style="list-style-type: none"> <li>Class-leading insulation levels</li> <li>Bi-directional communication to power utility of specific control and configuration parameters</li> <li>High level energy management system interacts with external (Wide Area Network) and local (Home Area Network)</li> <li>Communicates stored water volume and temperature</li> <li>Automatic sterilisation function</li> <li>Algorithm specifically calculates:               <ul style="list-style-type: none"> <li>Hot water volume</li> <li>How much more energy can be stored in the tank until the maximum set temperature is reached</li> <li>Water and energy consumption over a defined period</li> </ul> </li> </ul>
Heat loss over 24 hours (ΔT 45k): Storage capacity @ 65°C water (ΔT 55k)	<ul style="list-style-type: none"> <li>125l : 7.1kWh 0.95kWh</li> <li>150l : 8.8kWh 1.1kWh</li> <li>210l : 12.7kWh 1.4kWh</li> <li>250l : 15.3kWh 1.55kWh</li> <li>300l : 18.4kWh 1.96kWh</li> </ul>

### Cylinder Heat Loss Comparison

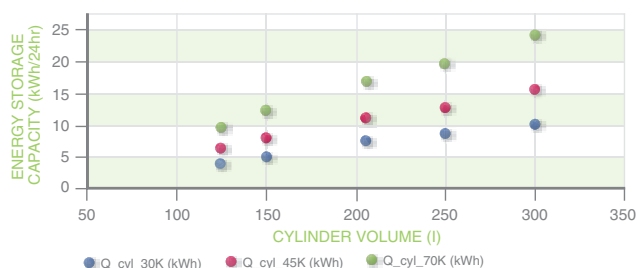


This graph illustrates the standing heat loss of a range of Quantum Cylinders against range of references.

### Notes

- Dimplex Quantum values measured for direct electric cylinder in accordance with EN12897 at a temperature difference between water (65°C) and ambient (20°C) of 45K.
- CHeSS standard and best values in accordance with central heating system specification CE 51 2008, and Energy Saving Trust publication.
- Red Jacket calculation based on 80mm fibre glass insulation.

### Energy Storage Capacity Water Cylinders



This graph illustrates the energy storage capacity of the Quantum Cylinder across a range of temperatures.

- Spray foam cylinder heat loss data taken from competitor product range. The stated insulation thickness is 35mm.
- It should also be considered that cylinder replacements are covered under Part L1B of building regulations (conservation of fuel and energy). Part L1B refers to the Domestic Building Compliance Guide which calls for cylinders to have a heat loss of no more than the high level products as specified in CE 51 2008.

# Heater sizing guide

Dimplex provides a number of options, to meet different property and timescale requirements. If you need to obtain an indication of the heating requirements for estimating or if you need heating for one or two rooms, please use this Selection Guide.

Alternatively use our online calculator at [www.dimplex.co.uk/heatdesign](http://www.dimplex.co.uk/heatdesign)

For single properties, please complete the form on our website (also at [www.dimplex.co.uk/heatdesign](http://www.dimplex.co.uk/heatdesign)) and send it with a sketch plan to our heating design department. We aim to provide an accurate assessment within 7 working days.

For multiple properties, please send us comprehensive scale drawings (scale 1:50 or 1:100) together with construction details and any other relevant information. We offer a 14 working day service for this type of assessment.

Our contact details are:

email: [heat.design@dimplex.co.uk](mailto:heat.design@dimplex.co.uk)  
Heating Design Team, Dimplex,  
Millbrook House, Grange Drive,  
Hedge End, Southampton SO30 2DF

The tables below provide heater sizing guidance for Quantum heaters. Knowing the floor area, the wall construction and the number of outside walls, the heater loading in kilowatts is indicated in the appropriate table. These tables do not

take into account particularly old properties or those built very recently. If your property fits into one of these classifications, please complete the form on our website so that we can provide a more accurate assessment.

**Living or dining room: Quantum**  
Heater loading in kW. Temperature 21°C

Floor area m <sup>2</sup>	Solid walls no. of outside walls			Cavity walls no. of outside walls			Insulated cavity walls no. of outside walls		
	1	2	3	1	2	3	1	2	3
12	1.84	2.16	2.88	1.60	1.92	2.48	1.12	1.28	1.68
16	2.08	2.48	3.20	1.84	2.32	2.88	1.36	1.60	1.92
20	2.64	3.12	3.92	2.32	2.72	3.44	1.68	1.92	2.32
24	2.96	3.44	4.32	2.64	3.12	3.76	2.08	2.32	2.64
28	3.28	3.92	4.80	2.96	3.44	4.24	2.16	2.48	2.96
32	3.52	4.32	5.28	3.28	3.76	4.72	2.40	2.72	3.20

**Bedrooms: For bedrooms panel heaters are recommended.**  
Heater loading in kW. Temperature 18°C

Floor area m <sup>2</sup>	Solid walls no. of outside walls			Cavity walls no. of outside walls			Insulated cavity walls no. of outside walls		
	1	2	3	1	2	3	1	2	3
8	0.8	1.3	1.7	0.8	1.0	1.4	0.8	0.9	1.4
12	0.9	1.8	2.3	0.9	1.4	2.1	0.8	1.4	1.8
16	1.2	2.1	2.7	1.0	1.7	2.2	0.9	1.6	2.1
20	1.4	2.2	3.1	1.2	2.0	2.6	1.0	1.8	2.4
24	1.5	2.3	3.4	1.2	2.1	2.9	1.0	1.9	2.5

**Kitchen: Quantum**  
Heater loading in kW. Temperature 18°C

Floor area m <sup>2</sup>	Solid walls no. of outside walls			Cavity walls no. of outside walls			Insulated cavity walls no. of outside walls		
	1	2	3	1	2	3	1	2	3
10	1.28	1.68	2.32	1.12	1.60	1.92	For all kitchens with cavity wall insulation direct heating is preferred.		
12	1.52	2.16	2.64	1.36	1.84	2.32			
14	1.68	2.40	2.88	1.60	2.08	2.48			
16	1.92	2.64	3.12	1.68	2.32	2.72			

**Commercial heating** For greater control and economy of operation Quantum heaters are recommended. Sizing is based on a single storey with a ceiling height of 3m and a minimum of 75mm of roof insulation.

**Office: Quantum**  
Heater loading in kW. Temperature 21°C

Floor area m <sup>2</sup>	Solid walls No. of outside walls			Cavity walls No. of outside walls			Insulated cavity walls No. of outside walls		
	1	2	3	1	2	3	1	2	3
15	2.16	2.96	4.08	2.00	2.56	3.52	1.68	2.08	2.64
20	2.64	3.52	4.48	2.40	3.12	4.00	2.08	2.56	3.12
25	2.96	4.08	5.20	2.72	3.68	4.56	2.40	3.04	3.60
30	3.52	4.72	5.84	3.36	4.24	5.20	2.88	3.52	4.16
40	4.80	5.92	7.68	4.40	5.36	6.72	3.92	4.48	5.36
50	5.28	6.80	8.40	4.96	6.24	7.44	4.48	5.28	6.08



A world of expertise



### Specifications

Dimplex policy is one of continuous improvement; the Company therefore reserves the right to alter specifications without notice. The information contained in this brochure is correct at the time of printing. You are advised to consult your Dealer before purchasing.

### Installation Guidance

This brochure is designed to assist you with your choice of Dimplex products and it is not intended as an installation guide. For safety, products should only be installed by a competent person, in accordance with current regulations and the manufacturer's instructions.

### The Dimplex Range

Dimplex offers the widest range of renewable energy, electric space and water heating products in the world – over 400. In addition to this publication, we have a wide range of brochures for both domestic and commercial applications. Please visit our website [www.dimplex.co.uk](http://www.dimplex.co.uk) for more information.



Domestic heating brochure



Designer range brochure



Towel rail brochure



Commercial brochure



Solar PV brochure



Heat pump brochure



Electric fires brochure



Solar Thermal brochure



EC-Eau Cylinder brochure



SmartRad brochure



Solid fuel brochure

For more information on Quantum, please

visit: [www.dimplex.co.uk/quantum](http://www.dimplex.co.uk/quantum) email: [customer.services@dimplex.co.uk](mailto:customer.services@dimplex.co.uk)

or call: Trade – 0844 879 3587 Consumer – 0844 879 3588

For Republic of Ireland, contact Dimpco on +353 (0)1 8424 277, email [sales@dimpco.ie](mailto:sales@dimpco.ie) or visit [www.dimpco.ie](http://www.dimpco.ie)

A division of the GDC Group, Millbrook House, Grange Drive, Hedge End, Southampton SO30 2DF

For Northern Ireland, contact Glen Dimplex N.I. Limited, Unit No 24, Seagoe Industrial Estate, Portadown, Craigavon, Co. Armagh BT63 5TH



PATENTS PENDING



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